

**IN THE CLAIMS:**

Please AMEND claims 1, 4-7, and 9-20 in accordance with the following:

1. (CURRENTLY AMENDED) An apparatus for recording data on an optical recording medium, comprising:

a recording waveform generating unit which generates a recording waveform having an erase pattern containing a leading pulse and a multi-pulse having a high power level and a low power level and a recording pattern containing another multi-pulse recording pulses, a power level of a-the leading pulse of the erase pattern being a-the low power level of the multi-pulse and a power level of a pulse-period between an end point of the erase pattern and a start point of a leading pulse of the recording pattern being a-the high power level of the multi-pulse; and

a pickup unit which generates light to the optical recording medium according to the generated recording waveform so that a mark or a space is formed on the optical recording medium.

2. (ORIGINAL) The apparatus of claim 1, further comprising: a channel modulation unit which channel modulates data provided from an outside source, and outputs an NRZI data signal to the recording waveform generating unit.

3. (ORIGINAL) The apparatus of claim 1, wherein the pickup unit comprises:

a motor which rotates the optical recording medium;

an optical head having a laser device which generates a laser beam to the optical recording medium or receives the laser beam reflected from the optical recording medium;

a servo circuit which servo-controls the motor and the optical head; and

a laser driving circuit which drives the laser device installed in the optical head.

4. (CURRENTLY AMENDED) An apparatus for recording data on an information storage medium, comprising:

a recording waveform generating unit which generates a recording waveform comprising a recording pattern having recording pulses, an erase pattern having a leading pulse and a multi-pulse having a high power level and a low power level, and a cooling pulse concatenating the recording and erase patterns, a power level of a-the leading pulse of the erase pattern being a-the low power level of the multi-pulse and a power level of a pulse-period of between an end point of the erase pattern and a start point of a leading pulse of the recording pattern being a-the high power level of the multi-pulse; and

a pickup unit which records with respect to the information storage medium according to the generated recording waveform so as to form a mark and/or a space on the information storage medium.

5. (CURRENTLY AMENDED) The apparatus of claim 1, wherein the recording waveform generating unit generates a further multi-pulse of another recording pattern, and a cooling pulse as having a cooling power level less than the low power level of the multi-pulse connecting the leading pulse a portion of the multi-pulse of the erase pattern and another portion of the further multi-pulse of the another recording pattern.

6. (CURRENTLY AMENDED) The apparatus of claim 4, wherein the generating unit adjusts a-the period pulse of the recording pattern to be the high power level according to a pulse of the multi-pulse of the erase pattern.

7. (CURRENTLY AMENDED) An apparatus for recording data on an information storage medium, comprising, comprising:

a modulator which modulates input data according to according to a Run Length Limited (RLL)(1, 7);

a recording waveform generating unit which receives the modulated input data and generates a recording waveform which includes a first multi-pulse having a plurality of first pulses to form the recording pattern in response to a first level of the input data and a leading pulse and a second multi-pulse having a high power level and a low power level a plurality of second pulses to form the erase pattern in response to a second level of the input data, a power level of a the leading pulse one of the second pulses of the erase pattern being at the low power level of the multi-pulse and a power level of a pulse period between an end point of the erase pattern and a start point of a leading pulse of the recording pattern being a the high power level of the multi-pulse; and

a pickup forming a mark or a space by using the generated recording and erasing waveforms.

8. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein the recording waveform generating unit generates the recording waveform using the input data modulated according to a Run Length Limited (RLL)(1, 7) method.

9. (CURRENTLY AMENDED) The apparatus of claim 1, wherein:

the recording waveform comprises another recording pattern formed of a further multi-pulse including the leading pulse of the recording pattern, and

~~the recording waveform generating unit adjusts the leading pulse of the multi-pulses of the another recording pattern to have a power that is greater than the power of the pulse between the end point of the erase pattern and the start point the recording pattern~~further multi-pulse comprising corresponding high power recording pulses with a high recording power level and low power recording pulses having a low recording power level,

the high recording power level being greater than the high power level of the erase pattern, and

the low recording power level being less than the low power level of the erase pattern.

10. (CURRENTLY AMENDED) The apparatus of claim 7, wherein:

the recording waveform comprises another recording pattern formed of a further multi-pulse including the leading pulse of the recording pattern,

and the further multi-pulse comprising corresponding high power recording pulses with a high recording power level and low power recording pulses having a low recording power level,

the high recording power level being greater than the high power level of the erase pattern, and

the low recording power level being less than the low power level of the erase pattern
~~recording waveform generating unit adjusts the leading pulse of the multi-pulses of the another recording pattern to have a power greater than the power of the pulse between the end point of the erase pattern and the start point the recording pattern.~~

11. (CURRENTLY AMENDED) The apparatus of claim 4, wherein:

the recording waveform comprises another recording pattern formed of a further multi-pulse including the leading pulse, and

the further multi-pulse comprising corresponding high power recording pulses with a high recording power level and low power recording pulses having a low recording power level,

the high recording power level being greater than the high power level of the erase pattern, and

the low recording power level being less than the low power level of the erase pattern
~~recording waveform generating unit adjusts the leading pulse of the multi-pulse of the another recording pattern to have a power that is greater than the power of the pulse between~~

~~the end point of the erase pattern and the start point the recording pattern.~~

12. (CURRENTLY AMENDED) The apparatus of claim 5, wherein:
the recording waveform comprises another recording pattern formed of a further multi-pulse including the leading pulse of recording pattern, and
the further multi-pulse comprising corresponding high power recording pulses with a high recording power level and low power recording pulses having a low recording power level,
the high recording power level being greater than the high power level of the erase pattern, and
the low recording power level being less than the low power level of the erase pattern
~~recording waveform generating unit adjusts the leading pulse of the multi-pulse of the another recording pattern to have a power greater than the power of the pulse between the end point of the erase pattern and the start point the recording pattern.~~

13. (CURRENTLY AMENDED) The apparatus of claim 9, wherein the recording waveform generating unit generates the recording waveform to include a cooling pulse concatenating the recording and erase patterns and having a cooling pulse power that is less than the low power level of the erase pattern
~~multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power, and the power of the first one of the multi-pulses of the recording pattern is equal to the first pulse power~~.

14. (CURRENTLY AMENDED) The apparatus of claim 10, wherein the multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power, and the power of the first one of the multi-pulses of the recording pattern is equal to the first pulse power
~~period starts when the second level changes to the first level.~~

15. (CURRENTLY AMENDED) The apparatus of claim 910, wherein the recording waveform generating unit generates in the recording waveform a cooling pulse concatenating the recording and erase patterns and having a cooling power other than the low power level of the erase pattern
~~multi-pulse of the another recording pattern further comprises a recording pulse having a recording power greater than the power of the pulse between the end point of the erase pattern and the start point the recording pattern.~~

16. (CURRENTLY AMENDED) The apparatus of claim 1, wherein the recording

waveform further comprises a cooling pulse concatenating and included in the erase pattern and an additional recording pattern, the cooling pulse having a cooling power less than a power of a last pulse of the another multi-pulse of the recording pattern and the low power level a power of a first pulse of the leading pulse multi-pulse of the erase pattern.

17. (CURRENTLY AMENDED) The apparatus of claim 4, wherein the cooling pulse has a cooling power less than a power of a last pulse of the recording pattern and/or the low power level a power of a-the leading pulse first pulse of the multi-pulse of the erase pattern.

18. (CURRENTLY AMENDED) The apparatus of claim 5, wherein the cooling pulse has a cooling power less than a recording power of the recording pattern and the low power level a power of a first pulse of the multi-pulse of leading pulse of the erase pattern.

19. (CURRENTLY AMENDED) An apparatus for recording data on an optical recording medium, comprising:

a recording waveform generating unit which generates a recording waveform having an erase pattern containing a leading pulse and a multi-pulse having a high power level and a low power level and a recording pattern containing another multi-pulse, a power level of a-the leading pulse of the erase pattern being athe high power level of the multi-pulse and a power level of a pulse period between an end point of the erase pattern and a start point of a leading pulse of the recording pattern being athe high power level of the multi-pulse; and

a pickup unit which generates light to the optical recording medium according to the generated recording waveform so that a mark or a space is formed on the optical recording medium.

20. (CURRENTLY AMENDED) An apparatus for recording data on an optical recording medium, comprising:

a recording waveform generating unit which generates a recording waveform having an erase pattern containing a leading pulse and a multi-pulse having a high power level and a low power level, and a recording pattern containing another multi-pulse, and a cooling pulse having a cooling power level below the low power level and which concatenates the recording and erase patterns, a power level of a-the leading pulse of the erase pattern being athe low power level of the multi-pulse and a power level of a pulse period between an end point of the erase pattern and a start point of a leading pulse of the recording pattern being athe low power level of

the multi-pulse; and

 a pickup unit which generates light to the optical recording medium according to the generated recording waveform so that a mark or a space is formed on the optical recording medium.